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Application No. 09/623,977

January 6, 2005

REMARKS/ARGUMENTS

Reconsideration and allowance of this application are respectfully requested. Currently, claims 1-26 are pending in this application.

Objection to the Specification:

The Amendment filed July 26, 2004 was objected to under 35 U.S.C. §132 because it allegedly introduces new matter into the disclosure. In particular, the Office Action stated the following:

“The added material, which is not supported by the original disclosure, is as follows: the applicant removed the phrase ‘[t]he signal mixing’ and replaced the term with a new phrase ‘[a] signal concentration.’ This amendment seems to be intended to counter the examiner’s interpretation of the term ‘multichannel connection’ as including signal mixing (as discussed below and in previous Office actions). Applicant argues that Fig. 2 supports applicant’s amendment (page 13 of the amendment). Although Fig. 2 may or may not support the phrase ‘signal concentration’, the applicant has not pointed out where the specification supports removing the originally disclosed phrase ‘signal mixing’ thus broadening and/or materially changing the specification in a manner not originally disclosed by the applicant. Applicant is required to cancel the new matter in the reply to this Office Action.”

The sentence “The signal mixing (or ‘A signal concentration...’ as amended) can take place either in the user’s terminal equipment or in a centralised processing platform as is shown in Fig. 2.” has been deleted from the specification entirely. The previous recitation of “signal mixing” presented an error in the specification. The removal of the expression “signal mixing” simply corrects this error. Support for removing the original phrase “signal mixing” is provided by the

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remainder of the specification. For example, block diagram 230 of exchange equipment 100 illustrated in Fig. 2 is clearly labeled “N:M Concentrator.” Block diagram 230 is not labeled “Mixer.” The textual description of the originally-filed specification explicitly describes the N:M Concentrator 230 as selecting from input channels 11, 21, 31 those channels carrying useful information and passing only the selected channels over return link 5 as outputs of the N:M Concentrator 230. (See, e.g., page 4, lines 15 to 31 of the originally-filed specification.) In particular, page 4, lines 28-29 of the originally-filed specification states “Transmission efficiency is achieved because only the active subset N of the total number of channels M are transmitted at any one time.” This portion of the specification clearly provides support for N:M Concentrator 230 selecting certain input channels and passing only those selected channels over a return link 5, rather than mixing (adding two signals into a single stream).

Carrying the input channels over separate channels is indicated by reference on that link to “N-Channel Digital Audio Link” and again by the description of the N channels 51, 52 in the audio link. The N channels 51, 52 are clearly separate and distinguishable (see Figs. 3 and 4 as opposed to being mixed). Otherwise, it would not be possible to handle them separately in order to form a spatialized signal.

In Fig. 2, the only mixing that can possibly occur is performed in customer’s terminal equipment 10 where channels provided to spatialiser 15 are mixed to generate a spatialized signal in speaker equipment 12. (See Fig. 4 and

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page 4, lines 10-14 of the specification). Fig. 5 shows an alternative arrangement to that of Fig. 4 in which spatialization can be computed in the exchange equipment 100. (See page 7, lines 23-24).

Accordingly, in the context of the entire originally-filed specification, it is clearly apparent to those skilled in the art that the phrase “signal mixing” at page 3, line 28 of the specification was an error. This error has now been corrected by deletion of the entire sentence containing this phrase. There is no disclosure whatsoever of any mixing in its common usage taking place in the central processing platform (exchange equipment 100). As described above, the processes performed by N:M Concentrator 230, namely selecting from input channels 11, 21, 31 and passing only the selected channels over return link 5 is clearly not mixing. Deletion of “signal mixing” at page 3, line 28 is therefore in order.

Applicant further notes that the recitation of “**The** signal mixing (emphasis added)” also suggests that this sentence is in error since there is in fact no antecedent basis for “the” signal mixing in concentrator 230.

The Office Action alleges “Although Fig. 2 **may or may not** support the phrase ‘signal concentration’(emphasis added)”. Applicant respectfully disagrees. As discussed above, Fig. 2 clearly provides support for signal “concentration”. Block diagram 230 is explicitly labeled “N:M **Concentrator**”, and as described above concentrator 230 combines various inputs into a signal having a smaller

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number of channels 51, 52 etc. by selecting from input channels 11, 21, 31 and passing only those selected channels.

Accordingly, Applicant respectfully requests that the objection to the disclosure be withdrawn.

Rejections Under 35 U.S.C. §102 and §103:

Claims 1-8, 10-14 and 16-26 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Ludwig et al (U.S. '539, hereinafter "Ludwig"). Applicant respectfully traverses this rejection.

For a reference to anticipate a claim, each element must be found, either expressly or under principles of inherency, in the reference. Applicant submits that Ludwig fails to disclose each element of the claim invention. In particular, Ludwig fails to disclose a conference bridge having a multichannel connection to each of a plurality of terminal equipments in which the multichannel connection comprises a plurality of individual channels, as required by the independent claims. Every one of the plurality of terminal equipments in a teleconferencing system thus receives a multichannel connection comprising a plurality of individual channels. Independent claims 1, 10 and 16-17 further require that each of the individual channels received in one of the multichannel connections is separately processed by one of the terminal equipments.

There is no multichannel connection from a conference bridge to a plurality of terminal equipments in Ludwig. Considering only the audio aspects as shown in Figs. 14B and 15B, it will be apparent that each site receives a feed from each

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of one or more of the other sites. It may also generate a signal locally. Fig. 15B of Ludwig is illustrated below.

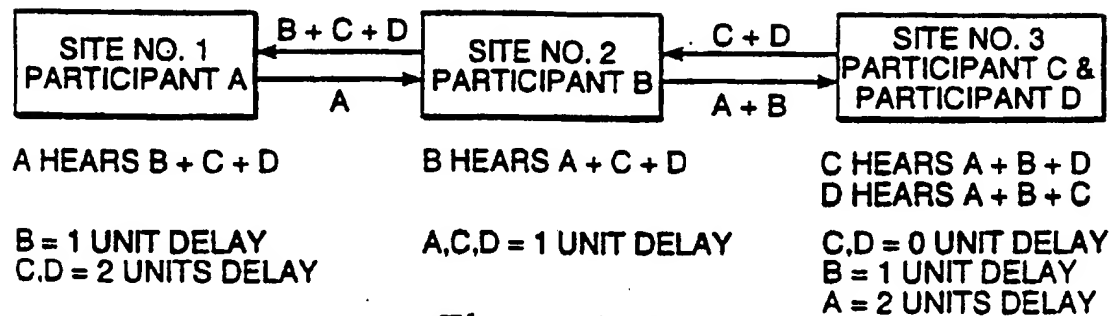


FIGURE 15B

In Fig. 15B, site number 2 receives a signal A from site number 1 and signal C + D from site number 3, and also generates a signal B itself. At each site, each received signal is either forwarded in its entirety or not at all. Any signals which are forwarded are mixed together. Site number 2 thus forwards a mixed signal A + B to site number 3 (from left to right in Fig. 15B above) and the mixed signal B + C + D to site number 1 (from right to left in Fig. 15B above). Signals C and D are both generated at the same site 3. Neither site number 1 nor site number 2 have any means of separating them again. They are mixed in the true sense of the word and cannot be unmixed or separately processed.

Multiplexing is analogous to carrying eggs in an egg box, where it is possible to handle the eggs separately on receipt. Mixing by summing the signal is analogous to transporting the eggs in the form of an omelet. There is no way of reconstituting the individual eggs from the omelet at the receiving end.

Again considering Fig. 15B, even if the connections were stereophonic such that C + D were mixed in such a way as to allow spatialization, that spatialization would have to be preserved in the further link from site number 2 to site number 1. Both sites 1 and 2 would therefore observe participants C and D in the same virtual positions if the outputs were to be spatialized. There would be no way of disentangling participants C and D.

The Office Action (see top of page 4) alleges that the conference bridge of Ludwig (35) comprises audio mixing circuitry which mixes the participant input channel into summed output signals. The output signals 38a-1 to 38b are alleged by the Office Action as being equivalent to the multichannel output required by the claims. Applicant respectfully disagrees with these allegations. Each output 38 is identified as being a “minus 1” summed output, and they are provided one for each participant. In contrast, each of the plurality of terminal equipments of the present invention has a multichannel connection to the conference bridge, and the individual channels in each received multichannel connection are processed separately.

It is not possible to separately process the mixed signals in a single participant input channel of the kind shown in Ludwig. Ludwig discloses a single audio channel being sent to each of the individual users. That audio channel carries a summed output of all the users’ inputs, except the user to whom the channel is directed. It is not a multichannel connection comprising a plurality of individual channels.

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The Office Action (bottom of page 4) then suggests that the AV switch 30 has a demultiplexer means to separately process each received channel to provide a plurality of outputs. There is no mention of such a demultiplexer. Indeed, portions of Ludwig described AV switch 30 as follows:

“A WAN gateway 40 provides for bidirectional communication between MLAN 10 and WAN 15 in FIG. 1. For this purpose, Data LAN hub 25 and A/V Switching Circuitry 30 are coupled to WAN gateway 40 via outputs 25a and 30a, respectively. Other devices connect A/V Switching Circuitry 30 and Data LAN hub 25 to add additional features/such as multimedia mail, conference recording, etc.) as discussed below.” Col. 8, lines 8-14.

“Note in FIG. 3 that Data LAN hub 25, A/V Switching Circuitry 30 and MLAN Server 60 also provide respective lines 25b, 30b, and 60e for coupling to additional multimedia resources 16 (FIG. 1), such as multimedia document management, multimedia databases, radio/TV channels, etc.” Col. 8, lines 26-31.

“A/V Switching Circuitry 30 (whether digital or analog as in the preferred embodiment) provides common audio/video switching for CMWs 12, conference bridges 35, WAN gateway 40 and multimedia resources 16, as determined by MLAN Server 60, which in turn controls conference bridges 35 and WAN gateway 44).” Col. 8, lines 54-59.

None of the above portions describes A/V switch 30 containing a demultiplexer. Indeed, the above portions describe A/V switch 30 as having entirely different functionality. If the Office Action maintains the rejection over Ludwig, Applicant respectfully requests that the next Office Action specifically identify the demultiplexer of A/V switch 30.

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The Office Action treats each received channel A, B, C and D of Ludwig as a separate channel, even if they have arrived on the same link. For example, the Office Action specifically treats channels A and B arriving at site number 3 as separate channels although they are both received over the single link from site number 2. However, the Office Action then alleges that the switch has the capability to separately process (demultiplex) each of these received channels. However, there is no disclosure whatsoever of this.

As described above, any received signal from another site can only be forwarded in its entirety (possibly further mixed with other signals) or not at all. For example, at site number 2 signal C + D is received from site number 3 and forwarded (further combined with signal B) to site number 1. In the other direction (left to right direction), signal A + B generated at site number 2 is forwarded to site number 3 but is not forwarded further. At no point in Figs. 14B, 15B and 17D is any signal deleted from a received combined signal. Thus signal A is transmitted from site number 1, combined at site number 2 with locally generated signal B, and further combined at site number 3 with locally generated signal C. From there it is forwarded to site number 4 which does not forward it further. In the reverse direction, signal D is combined at site number 3 with signal C and at site number 2 with signal B for transmission to site number 1, where it is not forwarded any further. At no point is a mixed signal, for example, signal A + B, sent to one site and only one component A (or B) forwarded further. Thus the Office Action's allegations that A/V switches 30 have the capability to separately

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process (e.g., demultiplex) any of the received channels A, B, C and D are completely unfounded.

In a footnote on page 5, the Office Action interprets the word “multiplex” as transmitting two or more signals as one signal. In particular, the Office Action states that the mixing (or summing) process generates a summed output “or multichannel output”. As commonly understood by those skilled in the art, these are quite separate ideas. A multichannel output implies that there are two separate channels which can be handled separately at the remote end. Demultiplexing is indeed the process of recovering the original two or more signals from an initial output. However, Ludwig clearly discloses that the two signals are mixed (summed) and without knowledge of one signal it is impossible to extract the other.

With respect to independent claims 3 and 12, Ludwig further fails to teach or suggest a conference bridge identifying currently active input channels and transmitting only those active channels over a multichannel connection together with control information identifying the transmitted channels. As discussed above, Ludwig fails to even disclose a multichannel connection, let alone transmitting information identifying the transmitted channels.

Accordingly, Applicant submits that claims 1-8, 10-14 and 16-26 are not anticipated by Ludwig and respectfully requests that the rejection of these claims under 35 U.S.C. §102 be withdrawn.

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Claims 9 and 15 were rejected under 35 U.S.C. §103 as allegedly being unpatentable over Ludwig. Since claims 9 and 15 depend at least indirectly from claims 1 and 10, respectively, Applicant submits that these claims are allowable for at least the reasons discussed above with respect to base claims 1 and 10. Ludwig fails to disclose all of the limitations of claims 1 and 10 and thus all of the limitations of claims 9 and 15.

Conclusion:

Applicant believes that this entire application is in condition for allowance and respectfully requests a notice to this effect. If the Examiner has any questions or believes that an interview would further prosecution of this application, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

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